

Exploring TPACK domains of Malaysian non-option ESL teachers in an online flipped learning course through *Blendspace*

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Abstract

The purpose of this paper is to explore teachers' Technological Pedagogical and Content Knowledge (TPACK) domains in planning digital tools-based activities. It discusses a small part of a major study that investigated Malaysian non-option ESL teacher's flipped ESL instructional design of teaching and learning in their own classroom context. Participants were involved in this case study. The miniscule analysis was done for a digital tool called Blendspace (a learning management system – LMS) in order to investigate teacher's classroom activity plans. The digital tools introduced to the participants were meant to support their ESL flipped learning instructional design. Findings show that new input ameliorated the existing TK domain and made it developmental. This has resulted an improvised TPACK which I coined a term 'Augmented TPACK' – an inclusive TPACK domains that consists of developmental TK and non-developmental PK and CK. Participants used Augmented TPACK to plan digital tools-based activity.

Keywords: TPACK, digital tools, flipped learning, ESL

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INTRODUCTION

This study is a miniscule and focused part of a bigger study about the design of ESL flipped instruction among non-options English Language teachers in Malaysia. Many studies on flipped learning have never missed revealing digital tools that support the pedagogy (Zamzami & Halili, 2016). Flipped learning is another new comer in education trend (Szparagowski, 2014). It becomes popular in the world of education and many educators as well as educational institutions adapted the idea out of its popularity (Bishop & Verleger, 2013; McBride, 2017).

The study was conducted in an online learning environment. An online course was created to support the environment. Initially, the online course designed for this study emerged from a needs analysis. It is found that 100% of the teachers were aware of the flipped learning initiative in the *Malaysia*

Education Blueprint 2013-2025 document (MEB) but only 60% of them knows what blended learning is all about. Narrowing down to look at their understanding on flipped learning concept, the result shows only 36% knows about it. However, when they were asked to describe flipped learning in an open ended question, they only presented vague ideas. The examples of such responses are as below:

Question: In my opinion Flipped Classroom is...

- | | |
|---------|---|
| RSP01 : | Interesting but schools are lacked of facilities. |
| RSP02 : | A contemporary technique relevant to current school students. |
| RSP03 : | Collaborated tools from the internet |

The result has projected an idea that ESL teachers in Malaysia, really need knowledge and guideline to implement flipped learning pedagogy in order to support the initiative. I believe that findings of this study can contribute to the area of flipped learning design as many researches mention that more research are needed in contributing to expanding understanding about this pedagogy (Moran & Young, 2014; Filiz & Kurt, 2015; Mehring, 2015). Thus, this miniscule study contributes to provide more exploration in this pedagogy.

Digital tools-supported flipped learning

Flipped learning is a pedagogy in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter (FLN, 2014). Some studies show that digital tools assist this pedagogy and distinguished flipped learning instruction from traditional instruction (Egbert, Herman & Lee, 2015; Basal, 2015; Newman, Kim, Lee, Brown, & Huston, 2016).

Digital tools have been used in many flipped learning practices. Zamzami Zainuddin and Siti Hajar Halili (2016) have analysed 20 articles about flipped classroom from 2013-2015. They found that digital tools or technology had been used to support flipped learning in various ways and were mentioned in 13 articles. The discussions about flipped learning in the articles revealed the importance of digital tools to support flipped learning.

Language lessons and digital tools-supported flipped learning

Reports of flipped learning across areas in the field of ESL are considered limited (Egbert, Herman & Lee, 2016) and those that address the flipped ESL instructional design even much more limited. Most of the studies about flipped learning are from foreign countries experiences. Insufficient of literature in flipped learning pedagogy has been mentioned in some initial researches on this area. Most of the writings are only in the form of blog posts, online magazines and newspapers. There is a need to have more researches to be done in order to augment reviews, suggestions and implications for teachers to start flipping their lessons (Mok, 2014; Moran & Young, 2014; Vaughan,

2014). Most of the researches were done in higher institution and there is scant research in the Teaching of English as a Second Language (TESL).

Regardless of scarcity of literature in language flipped learning, Moran and Young (2015) have conducted a mixed-method study that examines engagement of high school students in a flipped English Language Arts (ELA) classroom. The quantitative data indicates general support for the method's principles but revealed mixed attitudes towards it as a method of instruction, especially in terms of it as a strategy for addressing all instruction in the ELA classroom. On the other hand, the qualitative data indicates that some students felt more engaged by the flipped method, while others did not. The overall results of the research conclude that flipped method might be effective, in part, in an ELA classroom, but not as a sole means of instructions.

Another recent research on this pedagogy was conducted by Lane-Kelso (2015). It is closed to instructional design kind of study. This qualitative study focuses on the pedagogy of flipped instruction and the experiences of the flipping method with graduate students in Oman. The study gives insights on the flipped pedagogy based on the educators (participants) who implemented it on their students. The participants were Omani master teachers. Based on the findings and discussion, it is shown that flipped instruction is an appropriate bridge to integrate new technologies in the form of digital tools into a traditional educational.

Digital tools are existing technology that support teaching and learning. The nature of flipped learning is manipulating existing technology to suit students learning context (Bergmann & Sams, 2014). The 'in-class' session spare the time for students to interact and practice language skills. Researches expose that flipped learning creates opportunities for students to have more interaction and communication in classroom. This is because the content of the lesson has been revealed earlier during 'before-class' online session. In language learning, interaction in classroom helps students to have 'negotiation of meanings' where they can improve on whatever language skills they are lack of (Hedge, 2000).

Earlier in English Language as a Second Language learning (ESL) field, Stockwell (2012) mentions that the use of instructional technology can benefit students by providing repetition, comprehension checks and frequent opportunities for discussion, questions and review of material. In assisting teachers, it tailors the oral and written discourse sheltered classes by creating their own materials. For instance, software programmes, as well as websites, permit teachers to create materials geared to the reading levels of their students (Stockwell, 2012). However, recent online tools such as *Blendspace* and Google Apps create opportunities for students to create their own learning materials in order to complete classroom tasks and projects (Datig & Ruswick, 2013).

Based on the literature that I have reviewed, none of them have ever really looking at the stage or phase where teachers being trained before they start flipping their lessons. I do believe that teacher's initial ideas about using digital tools should be taken into account in investigating their bigger plan for flipped learning.

The role of digital tools in flipped learning

Digital tools are used to support flipped learning (Zamzami Zainuddin & Siti Hajar Halili, 2016). Below are some distinguished roles of technology in assisting flipped learning as mentioned by About Flipped Classroom (2015):

- Retrieve content for students to access at their own preferences and to suit their pace of learning (e.g. lecture material, readings, interactive multimedia),
- Curate content for students to gather their own resources.
- Present learning materials in a variety of formats to suit differentiated learning and multimodal learning (e.g. text, videos, audio, multimedia),
- Provide opportunities for discourse and interaction in and out of class (e.g. polling tools, discussion tools, content creation tools),
- Convey timely information, updates and reminders for students (e.g. micro-blogging, announcement tools),
- Provide immediate and anonymous feedback for teachers and students (e.g. quizzes, polls) to signal revision points,
- Capture data about students to analyse their progress and identify 'at risk' students (e.g. analytics).

(About Flipped Classroom, 2015)

Conceptual framework

The research took place in an online learning environment. An online course was developed to support the environment. The online course was conducted for 3 months; commenced on 1st July 2017 and accomplished on 30th September 2017. Data collection was done via the online tasks responses. The tasks involved discussions, quizzes, reflective journals and assignments. The online course was designed in a way to scaffold teachers towards producing instructional design that incorporates the use of digital tools and a flipped ESL lesson.

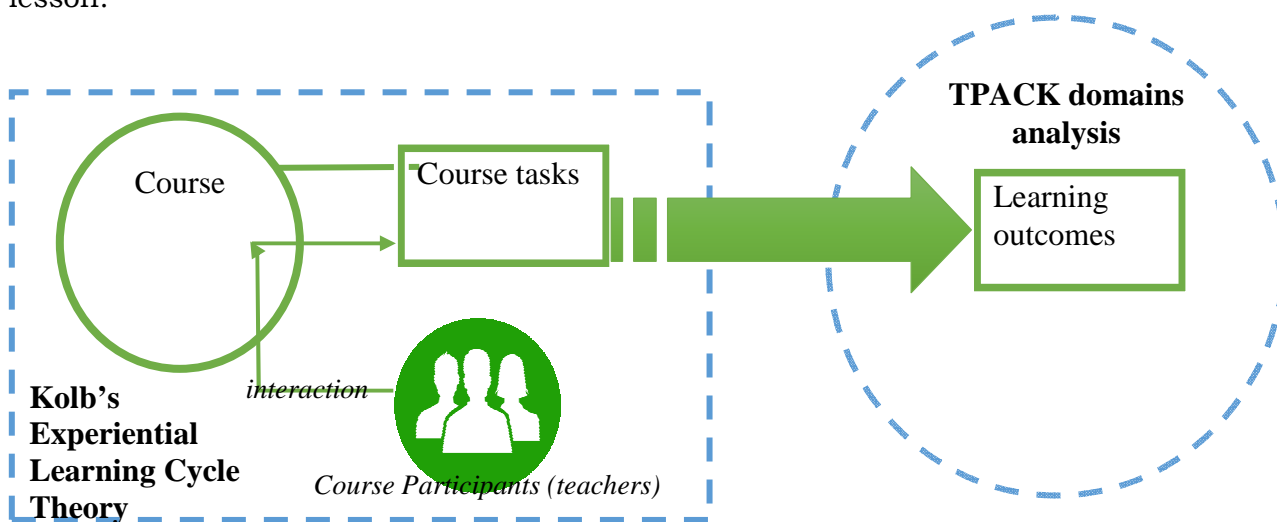


Figure 1: Conceptual Framework

The conceptual framework (Figure 1) shows that the online course was developed with underlying theory of *Kolb's Experiential Learning Cycle Theory* (Figure 2). Participants joined the course and interacted with the course tasks.

The responses they produced resulted from the interaction became the learning outcomes. The learning outcomes were analysed by using *Technological Pedagogical and Content Knowledge (TPACK)* framework.

By using TPACK framework, this study aims to analyse teacher's activity design for a digital tool that function as a learning management system. The question that this research had to answer was "*How do teachers use their Technology, Pedagogy and Content knowledge to design digital tool-based activities?*". This emerging question will later pave a path and provide appropriate lens to explore teacher's flipped ESL lessons. The online course introduced 3 digital tools – *Blendspace*, *EDpuzzle* and *Padlet*. For this small study, I only revealed the analysis of participant's responses that derived from *Blendspace* module. The analysis was done for two stages; (1) *Reflective Observation stage* and (2) *Abstract Conceptualisation stage*.

Kolb's experiential learning cycle

The online course was design based on Kolb's Experiential learning cycle.

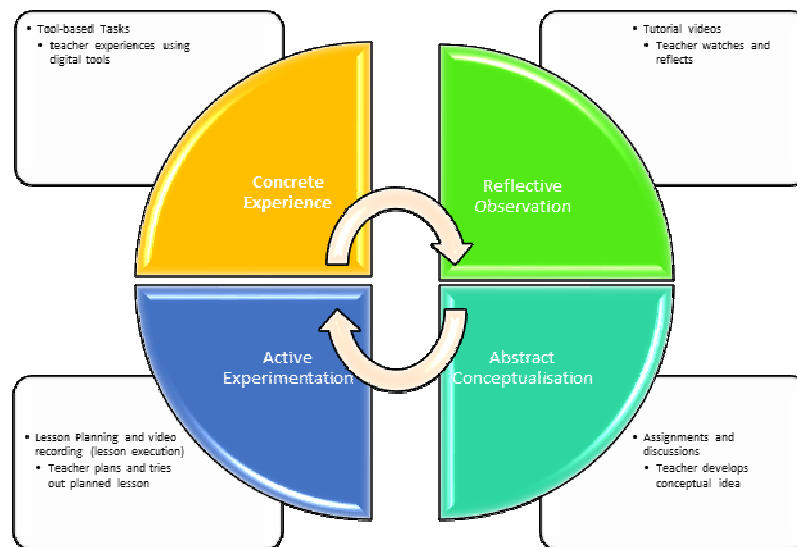


Figure 2: Adapted Kolb's Experiential Learning Cycle (1984) for Online Training Structure

Technological Pedagogical and Content Knowledge (TPACK) framework

This study used TPACK to analyse course learning outcomes resulted from participants' interactions with course tasks. The Technological Knowledge (TK) domain of this framework provides an apt lens to analyse the responses from the interactions.

Curry and Cherner (2016) mention that TPACK is a framework that was earlier introduced by Shulman (1986, 1987) as Pedagogical Content Knowledge (PCK) and later was reorganised by Koehler and Mishra (2009) in order to include technology domain. The framework is now called Technological Pedagogical and Content Knowledge (TPACK) as depicted in Figure 3. Curry and Cherner (2016) further explain based on Koehler and Mishra's work. The 3 domains of the framework are as below:

- Technological Knowledge (TK) describes teacher's ability to understand and operate both standard technologies and emerging technologies.
- Pedagogical Knowledge (PK) shows teacher's understanding of the processes and practices or methods of teaching and learning as well as issues of student learning, classroom management, lesson plan development and implementation.
- Content Knowledge (CK) teacher's knowledge about subject matter to be learned or taught. The knowledge may consist theories, concepts, ideas, organisational frameworks and knowledge of evidence and proof.

(Curry & Cherner, 2016)

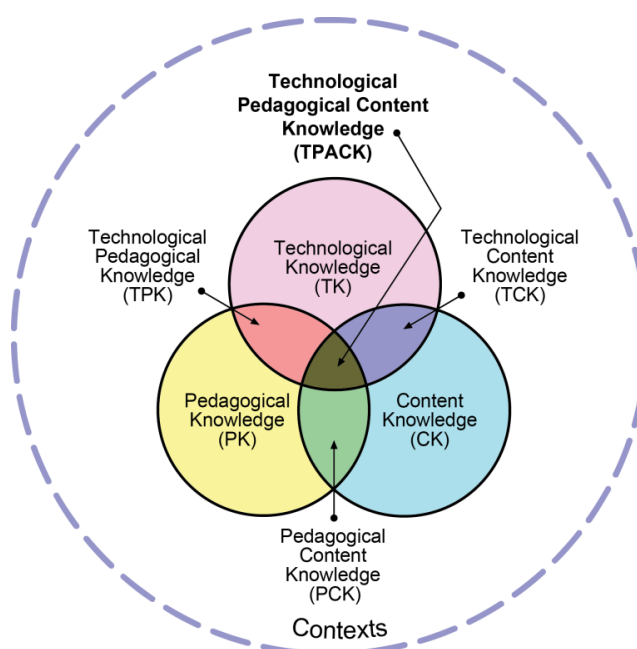


Figure 3: TPACK framework (www.tpack.org)

METHOD

An online course was set to supply online learning community environment with some tasks that stimulate teachers' reflective actions towards planning their digital tool-based activity. Given the name '*Digital Tools for 21st Century English Language Teaching*' (DTC1011); the course tasks were set by following 4 stages in Kolb's Experiential Learning Cycle (Figure 2). They are (1) Concrete experience, (2) Reflective Observation, (3) Abstract Conceptualisation and (4) Active experimentation. (McLeod, 2013). CANVAS Learning Management System (LMS) platform was used to deliver the course contents and to support online learning environment. In this study, the analysis was specifically done at *Reflective Observation (ROs)* and *Abstract Conceptualisation (ACs)* stages. Teacher's reflective journals, lesson plans and video recorded classroom instructions were used to triangulate the data retrieved from course tasks.

The tasks

This study consists analysis of responses resulted from course participants' interactions with the online learning tasks and contents. The tasks and contents were provided in an online course learning environment. The online course consisted of 21 tasks to be completed in order to achieve course accomplishment status. Specifically, for this study, 2 tasks were analysed – Task 3 (ROs) and Task 5 (ACs) for a digital tool *Blendspace*. Task 3 was chosen to provide data about initial plan of digital tool-based activity and Task 5 was chosen to provide data about conceptual plan of digital tool-based activity.

Samplings

Two samples were taken from the most outstanding, active and consistent course participants. Given pseudonyms were *Cempaka* and *Anggerik*. Cempaka was a Sekolah Jenis Kebangsaan (SJK) (Chinese Vernacular School) ESL teacher in east Malaysia state and Anggerik was a Sekolah Kebangsaan (SK) (National Primary School) ESL teacher in a peninsula Malaysia state.

Data analysis procedure

Data was analysed by using Individual-level Logic Model (Yin, 2014). This model suggests adaptable logical flow of data analysing for behavioural course of events of a sampling (Figure 4).

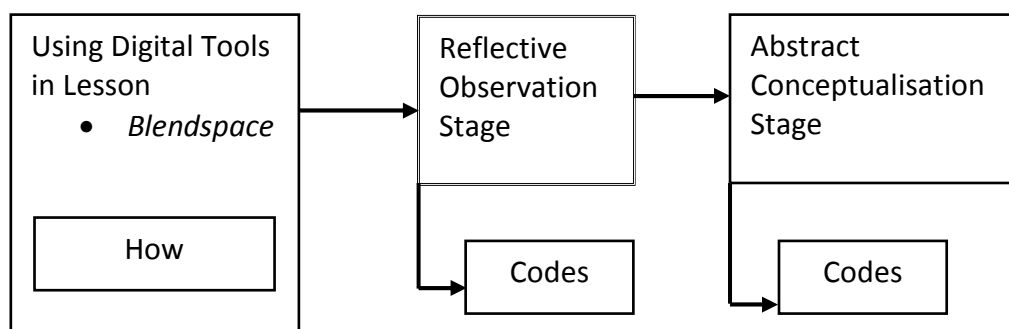


FIGURE 4: Data analysis by using Individual-Logic Model adapted from Yin (2014)

RESULTS AND DISCUSSION

Results

In this part, I provide TPACK domains analysis of 2 participants. Based on the analysis, TPACK domains found emerged in two categories; (1) single domains and (2) combined domains. Discussions are made based on combined domains because significant ameliorations of TK were found that helped answering “How do teachers use their technology, pedagogy and content knowledge to design digital tool-based activities?”. In this minuscule analysis, findings show that new input ameliorated the existing TK domain and made it developmental. This has resulted an improvised TPACK which I coined a term **‘Augmented TPACK’**. The *Augmented* TPACK is conceptual. It is an inclusive TPACK domains that consists of developmental TK and non-developmental PK and CK. Participants used the *Augmented* TPACK to design their contextual ESL lesson that incorporates the use of *Blendspace* to improve student’s

learning experience. Figure 5 shows the conceptual *Augmented* TPACK framework.

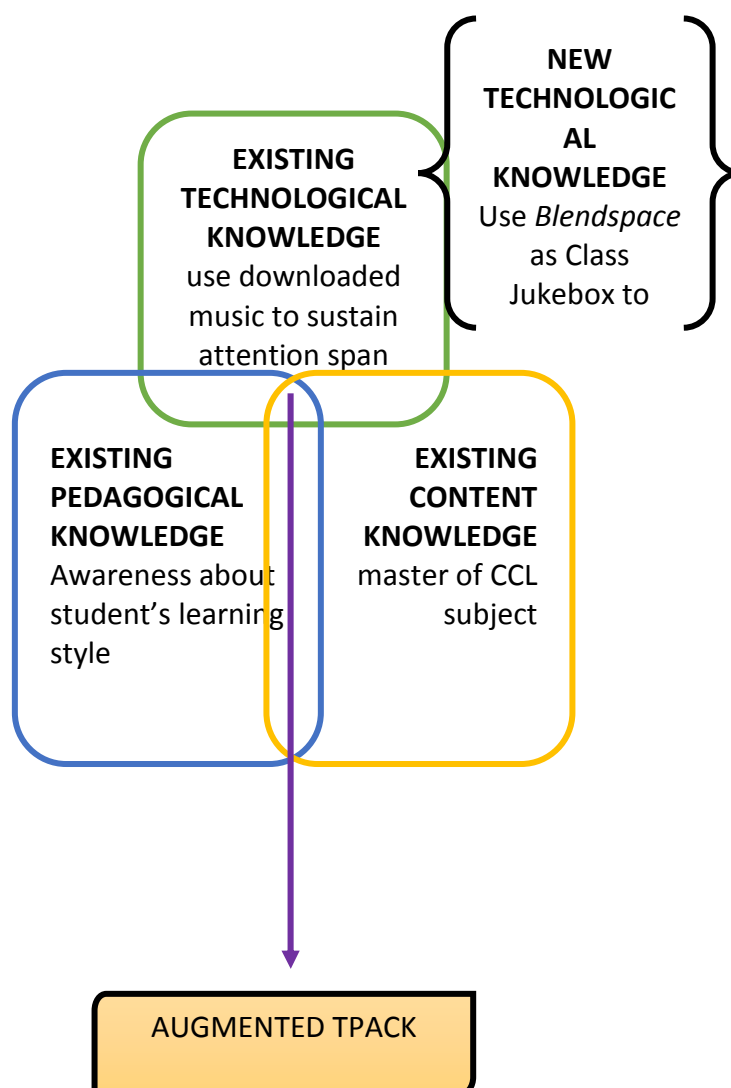


Figure 5: Sample of conceptual augmented TPACK framework

Sample 1: Cempaka (Background, Beliefs and Practice)

Cempaka is a non-option ESL teacher. She has been teaching English for 10 years. She is currently teaching in a Sekolah Jenis Kebangsaan Cina (Chinese vernacular school) in Sarawak. She believes that teaching and learning with using Information and Communication Technology (ICT) is challenging due to teachers' attitude towards technology.

Describing her own classroom practice, Cempaka mentions that she is a moderate ICT user. She usually uses YouTube videos for helping student's understanding and to gain their attention. She prefers using ICT in most of her lessons. However, inadequacy of ICT facilities in the school usually hinders her from using ICT for most of the time.

Cempaka's Interaction with Task 3 and Task 5

Task 3: Reflective Observational stage

This stage provided a view in which Cempaka chose and adapted 'Power of Video' and 'Class Jukebox'. Stating her preference, Cempaka revealed her existing TCK which is using video clip (TK) to teach grammatical items (CK). She mentioned,

"I prefer using video in my teaching and learning process. Before this, I tried using video clip of a movie (Madagascar) in teaching simple past tense, students showed their interest and requested for more."

Another following response revealed a TPK. Her existing PK was about devising pupils' previous knowledge to obtain students' voice. Her existing TK was using video for motivational tool. The combination of those domains became *Augmented* TPACK when she applied her new TK of using *Blendspace* as a platform to serve the purpose. Showing that she mentioned,

"I will ask students to tell me some of the movies or cartoons that they like the most. Then, I will place these videos at strategic points in my Blendspace."

Cempaka manipulated pupils' previous knowledge (PK) and planned to use pupils' favourite video on *Blendspace*. She was referring to *Blendspace* logical tile sequence when she mentioned 'strategic points'. This proves her way of using video for teaching and learning is now changed.

Task 5: Abstract Conceptualisation stage

In this stage, Cempaka was seen attracted to another *Blendspace* activity which was '*Smorgasbord*'. The emerging combined domains were TPKs. She adapted the activity for her Year 2 class and the topic she used was based on the curriculum specification. Using video for lesson stimulus was her existing TK. Amelioration of TK resulted to using video stimulus on *Blendspace* platform. The new TK was used to enhance sing-a-long activity, introductory stage and to imply i+1 kind of activity (PK). Combination of the new TK and existing PK resulted *Augmented* TPACK in her plan. The response below shows the selected amelioration of TK evidence:

"I will start with a song ' The wheel on the vehicles go round and round'. After that, there is a question for students to answer 'Name as many vehicles as possible that you have seen from the song.'"

Starting a lesson with a sing-a-long activity with purpose of unpacking pupils' previous knowledge depicted Cempaka's existing PK. Her usual practice of using video stimulus was the existing TK. Exposure to the new tool opened an opportunity to amelioration of TK and combination of different domains produced *Augmented* TPACK. Here her usual use of video stimulus had changed by using a prompting question on *Blendspace* platform which allows her pupils to interact with the video with *Blendspace* comment feature.

The Learning Outcome: Cempaka's Logical Blendspace Tiles Sequence

The plan that happened in both stages was put into a learning outcome. Cempaka produced a *Blendspace* lesson page by placing her conceptual plan into this platform (Figure 6). The data below is taken from an assignment given in Task 6. The link to this learning product is <http://bit.ly/ffi012017>

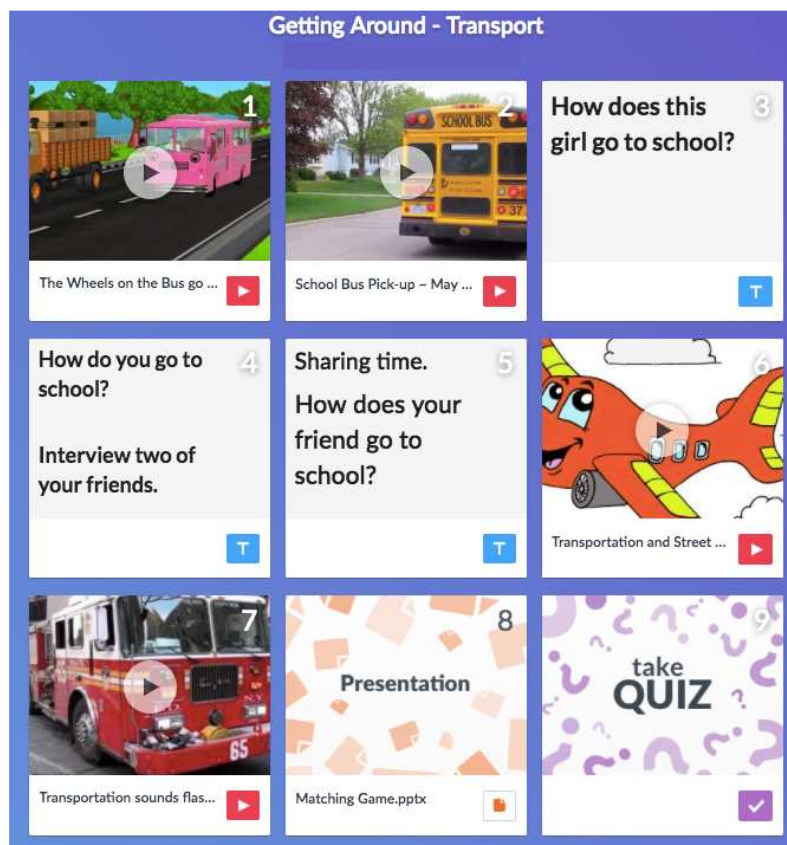


Figure 6: Cempaka's Blendspace Design

The *Blendspace* page design holistically depicts her *Augmented* TPACK. In this task, Cempaka has designed her Blendspace based on the contextual idea she described in Task 3 and 5. She uses 4 YouTube videos, 3 texts, 1 uploaded local file and 1 *Blendspace* quiz. We can see that she uses texts as prompts for speaking activities and in-class discussion. Matching game is done via a PowerPoint file. The only quiz she had in the lesson triggers pupils' ability to relate description of vehicles to the names of the vehicles. The way she designed her lesson content has shown that she has adapted 'Smorgasbord' concept of lesson content delivery.

Based on her design we can see that she knows how to arrange her teaching and learning content well with multimedia. She suits her teaching and learning context by using *Blendspace* as main prompt for classroom activities. This can be considered as a good start for her to use *Blendspace* to promote active student-based learning that involves Higher-Order Thinking Skills (HOTS) activities as suggested by Bergmann and Sams (2014) for flipped learning.

Sample 2: Anggerik (Background, Beliefs and Practice)

Similar to Cempaka, Anggerik also is a non-option ESL teacher. She has been teaching English for 5 years. She is currently teaching in Sekolah Kebangsaan (National Primary School) in Kedah. She believes that teachers in general have to equip themselves with knowledge in ICT because without this knowledge, teachers may have difficulties to understand pupils' needs. It is also important for their professional development purpose since using ICT in teaching and learning is challenging.

Describing her own classroom practice, Anggerik frequently uses ICT in the teaching of English. She utilises school ICT laboratory and the existing government provided Frog VLE. She uses Frog VLE for classroom exercises and discussion. Her pupils enjoy playing educational games and watching YouTube videos that she has posted occasionally. She agrees that using ICT in for teaching and learning can gain pupils' attention and participation towards learning.

Anggerik's Interaction with Task 3 and Task 5

The interaction with Task 3 happened in Reflective Observational stage and interaction with Task 5 happened in Abstract Conceptualisation stage.

Task 3: Reflective Observational stage

Anggerik chose and adapted 'Class Jukebox' and 'Beginning, Middle and End'. Her choice was contextual. She related her idea of using *Blendspace* to her own classroom context. The idea revealed TPK and TCK domains. It is found that TK domain become ameliorated after she interacted with the learning artefact. The amelioration found in her choice and justification in which she connected to her existing PK about attention span of pupils. Her description about technical procedures also became the evident of emergence of new TK and she connected it with subject of choice and the list of features of a novel. The ameliorated TK became a new TK and has formed *Augmented* TPACK when the new TK connected existing CK and PK. Below is the response excerpt that shows the amelioration of existing TK in her response:

"So, that's why i would like to use this 'class jukebox' way with my pupils to keep them attentive throughout the lesson."

Anggerik planned to use "classjuke box" (as stated in the learning artefact) with purpose of improving pupils' attention span.

"In my opinion, i think that this way is suitable to teach Contemporary Children's Literature (CCL). For example, 'The Jungle Book' . I will divide a new Blendspace into three sections: Beginning, Middle, and End. At the beginning level, i would upload the features of a novel (author, publisher, characters, setting and so on.) Then, i will post short quiz regarding the features of the novel. This is to test their understanding regarding the features."

When Anggerik stated 'this way' she was referring to the *Blendspace* activity called 'Beginning, Middle and End'. Contextually, she connected

this new TK to her existing CK that was proven by the description of subject and features of novel she described.

Task 5: Abstract Conceptualisation stage

In this stage, Anggerik was seen detailing her choice she mentioned in Reflective Observational stage. She adapted '*Beginning, Middle and End*' for her activity plan. She believed that this adaptation is suitable for Contemporary Children's Literature subject. This behaviour depicts the emergence of TCK domain. When she further described the plan, TPK domain appeared. Both TK that blended to CK and PK were ameliorated. In her response she mentioned,

I will divide a new Blendspace into three sections: Beginning, Middle and End. At the beginning level, i would upload the features of a novel (author, publisher, characters, setting and so on.)

The response shows that Anggerik has grabbed the idea of Blendspace feature that allows her lesson to be arranged into logical Blendspace tile sequence. The new TK was combined with her existing CK and produced *Augmented* TPACK that changed her usual practice of delivering her lesson content.

"Then, i will post short quiz regarding the features of the novel and discuss the answers. This is to test their understanding regarding the features."

In continuation, Anggerik has shown that she could carry out in-class assessment by using quiz feature in Blendspace. The *Augmented* TPACK showed modification to her usual in-class assessment practice.

The Learning Outcome: Anggerik's Logical Blendspace Tiles Sequence

Anggerik's *Augmented* TPACK emerged in both stages was transformed into a learning product in Task 6. The data below is taken from an assignment given in Task 6. The link to this learning product is <http://bit.ly/ffi022017>

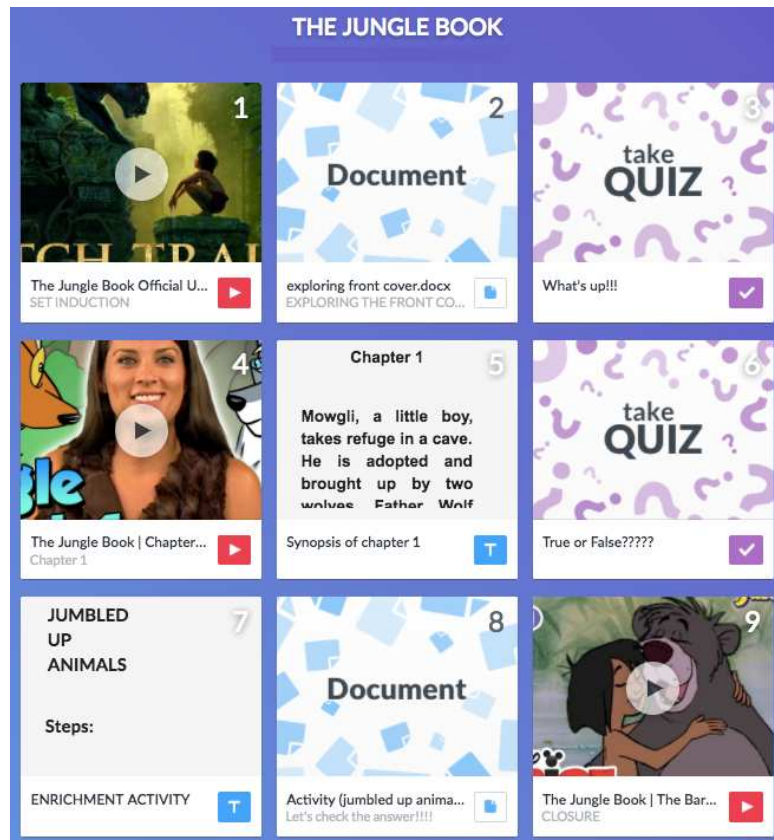


Figure 7: Anggerik's Blendspace Design

The *Blendspace* she created shows how she scaffolds learning by using various sources such as 4 YouTube videos, 4 textual documents and 2 quizzes. She has shown the ability to arrange her lesson contents in proper sequence and this is the evidence of ameliorated TK and affected her PK. Her previous practice was playing YouTube videos from YouTube webpage as she described in Task 02,

Other than that, I also would use YOUTUBE to play stories and songs. My pupils love to watch it. Moreover, I also would use ICT by preparing power point presentation, videos and songs for my pupils.

Her *Blendspace* design also shows how the amelioration of her existing TK has produced *Augmented* TPACK.

III. CONCLUSION

Having the teachers revealing their TPACK domains after interacting with the online course tasks, I would say that they are able to conduct flipped learning in their own way and assisted by modification of the existing knowledge of the use of digital tools (TK) that formed *Augmented* TPACK. The analysis shows that teachers used their existing TPACK as a manipulative knowledge for them to plan digital tools-based activities. New input on Technological Knowledge (TK) affected the existing TPACK and produced *Augmented* TPACK that

changed teacher's current classroom practice. On the other hand, teachers also became intrinsically motivated to practice flipped learning and the pedagogy will provide opportunity for their pupils to involve in active and personalised learning. Digital tools used in their activity plans have shown modification of teachers' TK domain and the existing TPACK framework was augmented; thus *Augmented* TPACK modifies teachers' common classroom practice towards better lesson delivery especially when teachers have the intention to explore flipped learning for ESL.

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